HOW TO

Collect Field Samples and Identify the Oak Wilt Fungus in the Laboratory

USDA United States Department of Agriculture
Prepared by Forest Service Northeastern Area State & Private Forestry
NA-FR-01-99

Introduction
Sample Collection and Storage
Laboratory Isolation Procedures
Companion Publication
For Further Information
Author, Acknowledgments, Photo Credits, Illustration Photo, Cover Photo, Northeastern Area State and Private Forestry Offices

Introduction

Oak wilt is a serious disease that infects many species of oak. It is responsible for the death of

thousands of oak trees in forests, woodlots, and home landscapes each year. Oak wilt occurs in the eastern U.S., in an area delimited by Minnesota, Texas, Pennsylvania, and South Carolina.

Oak wilt is caused by a fungus that invades and impairs the tree's water conducting system, resulting in branch wilting and tree death. Oak species vary in their susceptibility to oak wilt. Red oaks are very susceptible; live oaks in Texas are intermediate; and white and bur oaks are moderately resistant to this disease.

Oak trees can become infected by the oak wilt fungus by root systems that become grafted between infected and healthy trees, or by beetle vectors carrying spores to freshly wounded trees. The biology and control of oak wilt is discussed in a USDA Forest Service companion publication, "How To Identify, Prevent, and Control Oak Wilt."

Accurate diagnosis of oak wilt is essential to proper management and is often needed to justify the cost of control efforts. Trained professionals can often diagnose oak wilt in the field based on signs, symptoms, pattern of spread, rate of tree mortality, and site history. Laboratory testing to positively confirm the presence of oak wilt is necessary, however, if field data are inconclusive.

Positive confirmation of oak wilt is obtained by laboratory isolation of the fungus from infected tree tissue. The following information, compiled from published papers and personal communications with diagnosticians in university plant disease clinics, provides standard and currently recommended sample collection and laboratory isolation techniques. Written for field and laboratory staff, it is offered as a practical guide on how to collect branch and stem samples suitable for oak wilt testing, and how to isolate and identify the oak wilt fungus in culture.